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REMARKS

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '928 in view of Kando et al. '009 ("Kando")(the Examiner has not listed Kando on a PTO-892 form so as to make it formally of record; it is respectfully requested that Kando be listed in a PTO-892 form in the next Office Action). Claims 1 and 6 are independent. This rejection is respectfully traversed for the following reasons.

Claim 1 recites in pertinent part, "optical paths from said light emitting portions for respectively emitting light of different wavelengths to the object lens being the same regardless of wavelength." Claim 6 similarly recites in pertinent part, "in a condition where optical paths from said light emitting portions for respectively emitting light of different wavelengths to the object lens are the same regardless of wavelength ... ." Support for the aforementioned feature can be found, for example, on page 11, line 22 – page 12, line 9 of Applicants' specification (support for new claim 8 can be found, for example, on page 3, line 25 – page 4, line 9 of Applicants' specification). According to one aspect of the present invention, the distances and optical paths between the respective light emitting portions of the semiconductor laser diode array and the object lens can be substantially the same. Therefore, even when divergent rays enter the object lens, the aberration generated in the object lens can be stabilized.

As a result, the numerical apertures can be controlled to be changed in accordance with the switching of the wavelength of the irradiation light, whereby the laser beam can be focused on the recording face of the optical recording medium arbitrarily selected from a plurality of optical recording media different at the height of the recording face (*see, e.g.,* page 4, line 21-page 5, line 8 of Applicants' specification). Only Applicants have recognized and considered

such effects, and conceived of a novel and non-obvious device configuration which can make it possible to realize said effects.

Turning to the cited prior art, JP '928 discloses only an optical apparatus in which optical beams respectively are emitted from two semiconductor lasers LD1 and LD2 (*see* Figure 1). Of the two, the divergence angle of an optical beam having a wavelength of 780 nm is adjusted with a spherical lens 50. Subsequently, the optical beams having different wavelengths are guided in the same direction by a beam splitter 30 to enter an object lens 75. According to the device of JP '928, therefore, because the divergence angle of only the optical beam having a wavelength of 780 nm is adjusted, optical paths of the optical beams respectively emitted from the two semiconductor lasers LD1 and LD2 are separated from each other. In addition, the spherical lens 50 is arranged only for the optical beam having a wavelength of 780 nm with the beam splitter 30 being arranged between the two semiconductor lasers LD1 and LD2 and the object lens 75.

Accordingly, the optical apparatus structure of JP '928 is configured so that the optical beams respectively having different wavelengths are guided in the same direction so that the two semiconductor lasers LD1 and LD2 can not be arranged in the same position on an optical path; whereby, a distance L1 from the semiconductor laser LD1 having a wavelength of 780 nm to the object lens 75 is smaller than a distance L2 from the semiconductor laser LD2 having a wavelength of 630 nm to the object leas 75. In other words, in JP '928, the distances from the semiconductor lasers LD1 and LD2 to the object lens 75 are not the same so that the optical paths of the laser beams emitted from the semiconductor lasers LD1 and LD2 to the object lens 75 are different. Accordingly, as discussed above, the spherical lens 50 by which the divergence angle of the laser beam is adjusted can be arranged only for the semiconductor laser LD1 so that the device of JP '928 is subject to falsely adjusting a numerical aperture on an object lens 75.

Only Applicants have recognized this drawback of the conventional design (such as in JP '928) so that the cited prior art provides no motivation for reaching the claimed construction which can make it possible to obviate the aforementioned drawback.

Indeed, Applicants conceived of the novel ***combination*** which can obviate the aforementioned drawback, in which optical paths from the light emitting portions for respectively emitting light of different wavelengths to the object lens can be the ***same*** regardless of wavelength. As discussed above, JP '928 expressly discloses ***different*** optical paths of the laser beams having different wave engths emitted from the semiconductor lasers LD1 and LD2. Moreover, JP '928 further fails to disclose or suggest "curvatures and aspheric coefficients of said object lens being defined so that said object lens has a plurality of numerical apertures to be changed in accordance with switching between said different wavelengths, whereby allowing said laser beam to be focused on said first optical recording medium or said second optical recording medium." The Examiner does not point to specific portions of JP '928 which allegedly disclose the aforementioned feature but rather refers to wide ranging portions which appear to be silent as to the particular features recited in claims 1 and 6.

According to the claimed combination, distances and the optical paths between the respective light emitting portions of the semiconductor laser diode array and the object lens can be substantially the same without arranging a spherical lens in the optical path from either of the light emitting portions to the objec: lens. The present invention can therefore make it possible for numerical apertures to be changed in accordance with the switching of the wavelength of the irradiation light even when divergent rays of the finite optical system enter the object lens, and for the laser beam having passed through the object lens to be focused on the recording face of the corresponding optical recording medium.

It should be noted that only Applicants recognized and considered the aforementioned drawbacks of conventional optical apparatus designs and provided the requisite motivation to obtain the claimed ***combination***. Namely, with respect to divergent rays, the angle of the light entering the object lens displaced in accordance with the variation of the disk changes, and therefore, in the case where the wavelength of the light is also changed, Applicants found that the aberration generated in the object lens always transforms so that a singly-used finite conjugate type object lens is very difficult to design and has not yet been realized until the present invention (*see, e.g.*, page 2, line 24 - page 3, line 4 of Applicants' specification).

The inventors of the present invention conceived of the technique that the distance between light emitting portions of a monolithic semiconductor laser diode array including light emitting portions integrated on one substrate for emitting light of different wavelengths can be very accurately set to 270 μm or less. Further, by fixing the relative position between an object lens and the light emitting portions (semiconductor laser diode array, the photo detector and the object lens fixedly arranged), the inventors found that the optical unit fixedly arranged can be displaced toward a focusing (optical axis) direction and a tracking direction in accordance with the change of the optical recording media. As a result, it can be made possible for the aberration generated in the object lens to be stabilized so as to make it easier to design a lens that can change its numerical aperture NA and its focusing position in accordance with divergent rays emitted from light emitting portions respectively of different wavelengths, whereby it can be made possible to provide a finite conjugate type object lens applicable to different types of optical recording media (*see* page 3, line 25 - page 4, line 9 of Applicants' specification).

According to their research, the inventors of the present invention conceived of a combination in which a unit having the object lens fixed thereon can be moved against each of

different types of optical recording media. In such a combination, two light emitting portions of semiconductor laser diodes switched to emit light in accordance with the type of optical recording medium can be arranged in the substantially same position on the optical path. Specifically, the optical path from each light emitting portion to the object lens can be fixed and the distances from the respective light emitting portions to the object lens can be substantially the same. In other words, the distance from the object lens to the optical recording medium alone is variable whereas optical paths from the light emitting portions for respectively emitting light of different wavelengths to the object lens can be substantially the same regardless of wavelength. According to the present invention, therefore, an object lens can be provided having a numerical aperture NA changed in accordance with each of the two types of optical recording media that are different in the laser wavelength necessary for the recording/reproducing, as well as a method for designing the object lens (*see* page 11, line 22 - page 12, line 9 of Applicants' specification).

In this regard, it is noted that Kando does not obviate the aforementioned deficiencies of JP '928. Moreover, Kando does not disclose or suggest a semiconductor laser diode having light emitting portions for emitting light of different wavelengths, rendering it remote from JP '928. Nonetheless, neither JP '928 nor Kando suggest the new and unexpected results discussed above that can be achieved by the claimed ***combination***.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard for establishing obviousness under § 103:

> To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claims 1 and 6 because the proposed combination fails the "all the claim limitations" standard required under § 103.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims. *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1 and 6 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

Based on the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

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including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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